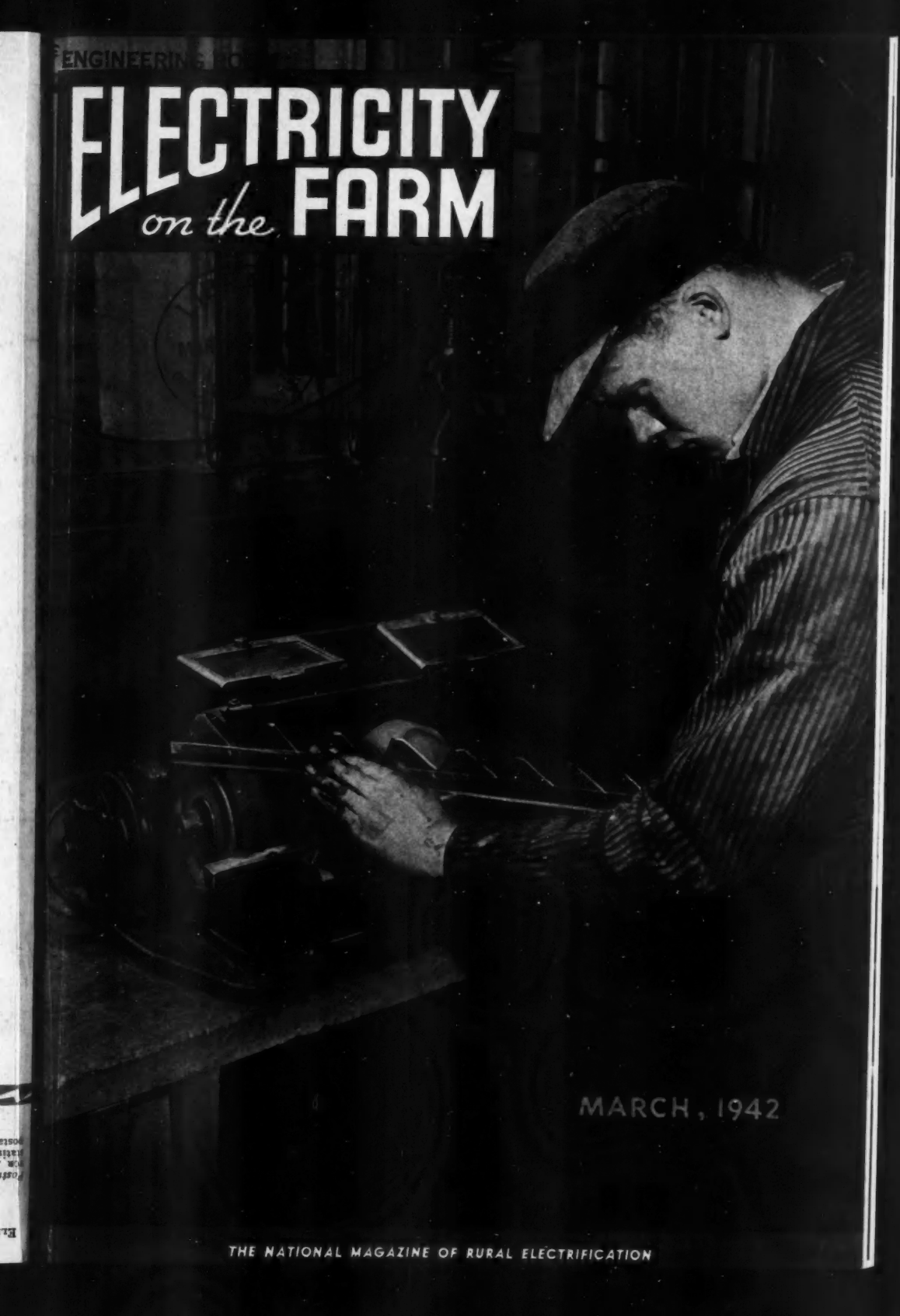
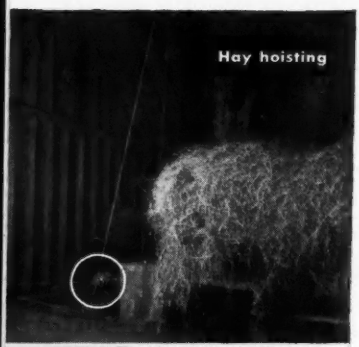
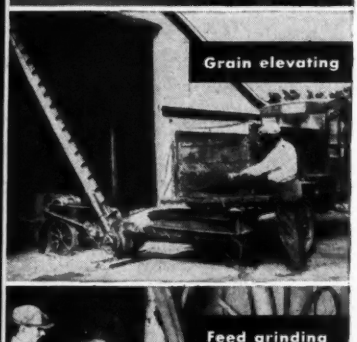

ENGINEERING
ELECTRICITY
on the FARM
MARCH, 1942
THE NATIONAL MAGAZINE OF RURAL ELECTRIFICATION

Here's Help

THAT WON'T LEAVE THE FARM





Let G-E Electric Motors Be Your Hired Hands

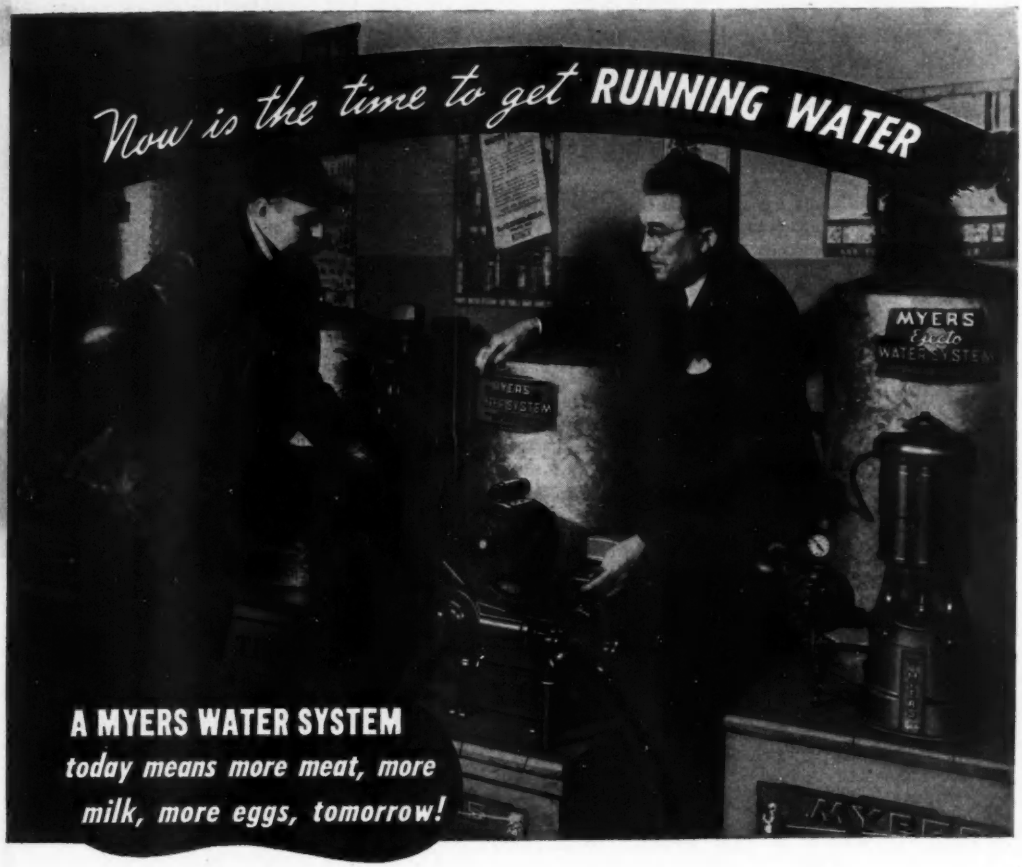
AS YOU'VE probably found out, with our country at war you're being called on to produce *more and more* with *less* help. The armed forces and industry are claiming men by the thousands, but the farmer's job is bigger than ever.

One of the ablest substitutes you'll find for this missing manpower is electrical equipment. The electric motor, in particular, can handle many jobs about the farm that were formerly done by hand; a few applications are shown here.

G.E. manufactures long-lived, thoroughly reliable motors of all types and sizes to meet your every need, including a portable variety which can be moved readily from place to place to handle various jobs. Your electrical dealer can probably help you select the right type for any given application; or write Rural Electrification Section, General Electric, Schenectady, N. Y.

SUBSTITUTE "WIRED" HELP FOR HIRED HELP!

GENERAL ELECTRIC



PRODUCE MORE FOOD . . . SAVE LABOR . . . with a MYERS

It is a time-proved fact that with a modern, efficient water system supplying water to barn, feed lot and poultry house, you can take care of more cows, hogs, chickens — produce far more than ever before. At today's favorable prices your increased income and profit will quickly pay all the cost. With handy faucets to furnish water instantly wherever wanted, you can save hours needed for other important jobs during the war. In addition, a reliable Myers will provide — in your home — many daily comforts and conveniences that you and your family have long wished for. Myers efficient new Ejectos and famous reciprocating models offer you the most complete selection of quality water systems in the world.

Talk It Over Today With Your Myers Dealer!

With the war taking metals used in water systems, you may not be able to get a new system as quickly as you want it. Therefore, why not have your present equipment checked for any needed repairs. Whether for service or a new installation call on your nearest Myers dealer. Write for his name and free illustrated book.

(16 WS-2)

THE F. E. MYERS & BRO. COMPANY
1122 FOURTH STREET **ASHLAND, OHIO**

Manufacturers of Farm Operating Equipment

MYERS *Dependable* **WATER SYSTEMS**

Editor's Chat

Insulation

Jan. 7. In eastern Colorado.

It is 10° below zero this morning. Cattle and horses in feed lots and pastures still have last night's snow on their backs—unmelted. The pheasant out there by the corn shock has his feathers all ruffled up. They remind me of refrigerators, ovens and overcoats. Refrigerators and good ovens must have insulation. My overcoat still does pretty good service as an insulator, for which it was intended. Nature protects the birds and animals with ruffleable feathers and thick hair. Inside their skins it is 98°; outside is unmelted snow at 10° below; between is insulation.

Incubators and Brooders

A little checking up on hatcheries indicates that orders for chicks have not been coming in as fast as might be expected for the increased poultry and egg production which the Government has requested. This may presage a rush of orders later which the hatcheries may not be prepared to handle promptly. The article by Mr. Washburn in this issue tells how hot water and fuel heated incubators can be electrified. Such conversion jobs must be done intelligently, using the correct type and wattage heating elements, and wiring in a manner to insure even distribution of heat and freedom from fire hazard. Machines using electrically heated water usually cost somewhat more to operate than incubators designed especially for direct electric heating. It would be well to operate converted machines for a few days without eggs in order to become accustomed to controlling the temperatures and humidities.

If the brooder of your choice should not be available from your dealer or manufacturer this year because of shortage of materials, you may be able to provide a satisfactory substitute by building your own hover and buying one of a number of types of heating elements with or without a fan for air circulation. These heating units having accompanying thermostats are available from several manufacturers with complete instructions for building the hover and installing the heater. Sizes range from 12 to 500 chick brooder capacity. Priority quotas for floor-type brooders granted by OPM in percentage of 1940 production are, for oil heated 100%, coal heated 100%, gas heated 85% and electrically heated 115%. Attachments and parts for brooders, however, have a quota of 160%. This includes heating units, fans and thermostats.

Spirit

I was looking out the window of the Burlington train as it rolled down across the apparently barren cattle corner of Wyoming one day in February enroute from Billings to Lincoln. To one who does not know and love that country, the brown scabby hills and scrub pines look desolate. The day before, we had come through the beautiful mountain country of Northern Idaho and Montana with its snow capped mountains, unbelievable blue-green trout streams and with hundreds of ducks and pheasants along the streams and in the fields. It was just going through my mind that one could look out once at those brown hills and see everything there was to see for the day, when we stopped at a little station. There was a stockyard at the right with a sign, "We sell everything. Auction every Sday." Next was a little "Chick Sales' Specialist's Cabin" on which some one had painted in grammar school letters "toilet." And then!——Emblazoned in very large professional block letters on a billboard was "Upton—The Best Town on Earth."

That's spirit! It's what makes us win wars. We could use more of it on the farm.

—*I'm proud I am a farmer*—

Freezers

Of all the newer electrical equipment available for farm use the food freezing cabinet is creating perhaps the most comment. People like frozen foods. Frozen products are like fresh in taste and health promoting qualities. The freezing process is simple. The home freezing cabinet brings the storage locker to one's door where it is handy, not only to obtain foods when needed on short notice, but also to tuck away small quantities for freezing which might otherwise be wasted.

George Kable

ELECTRICITY ON THE FARM
The National Magaine of Rural Electrification
CASE - SHEPPERD - MANN PUBLISHING CORP.
Editorial-Executive Offices: 24 W. 40th St., New York
MARCH, 1942 **VOL. 15, NO. 3**

GEORGE W. KABLE, *Editor;* KARL M. MANN, *President;* FRED SHEPPERD, *Editorial Director;* I. H. CASE, *Vice-Pres. and Gen'l Mgr.;* K. H. GORHAM, *Advertising Manager;* H. S. ESSEX, *Production Manager.* CHICAGO: 6 No. Michigan Ave.—W. S. CLEVENGER, *Western Manager;* L. M. ROCHE, *Western Representative.* SAN FRANCISCO: 444 Market St., Room 305—C. H. WOOLLEY. Subscription price 75 cents per year; single copies, 10 cents. Special bulk rates on application. *Contents copyrighted* 1942 *by Case-Shepperd-Mann Pub. Corp.*

Ice vs. Electricity For Milk Cooling

By **RALPH J. BUGBEE**, Agricultural Engr., Central Vermont Public Service Corp.

MANY a farmer has been spending valuable time recently putting up the year's supply of ice. The lifting and hard, back-breaking work which takes manpower in the winter will have to be done all over again next summer when the carefully cut cakes are taken from the ice house, washed, and lifted into the cooler or refrigerator.

What would you say if someone came along and told you to take 50 tons of ice from the pond, pack it in sawdust and next summer take it out again? Sure you would tell that someone to go jump in the pond, but Mr. Farmer, that is what you will do if you put up 800 cakes of 16x18x12-inch ice or 400 cakes 33x18x12 inches. Fifty tons of anything handled twice is a load for any back.

LaDuc's Prefer Electricity

Consider the case of the LaDuc's of Orwell. Mr. LaDuc died last summer and Mrs. LaDuc is carrying on the farm with the aid of her sons. Some years ago they put in an insulated cooler tank which cut in half the amount of ice they formerly had to harvest, but Mr. LaDuc did not live to enjoy the electric cooling equipment which was installed in their old tank after the electric line was built to their community last year.

When their barn was rebuilt a few years ago and the milk room added with the insulated tank, an old ice house was moved to a more handy location at a cost of $15. It was then enlarged and re-roofed, which cost a little over $200. This made an investment of at least $215.

Ice for the community was cut on the nearby "Fair", as the local stream is called. At first, Mr. LaDuc and his hired man cut their supply by hand and hauled it with the team. Later, when the road was cleared for auto travel, it was necessary to hire a truck to do the hauling at a cost of about $50, which included two trips for sawdust. The sawdust itself cost $10. The ice harvest took the best part of ten days each year for two men, working what time they could between the regular winter chores, averaging about six hours per day.

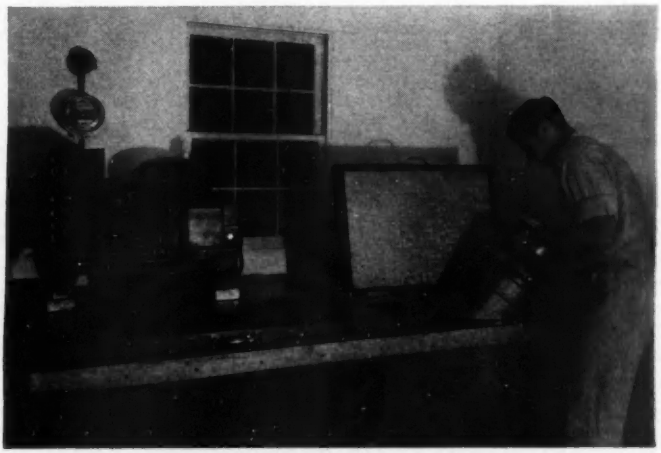
Mr. LaDuc was a fast and strong worker. In the summertime, he prepared the ice for use in about 15 to 20 minutes. It would take an average man half an hour.

Once in a while, in the rush of work on busy, hot summer days, the icing would be slighted and a can or two would be rejected at the milk plant. That loss can't be charged to the ice, but it is a very human factor to consider.

Since the installation of an electric cooler, almost all of the labor connected with the cooling of milk has been eliminated at the LaDuc farm. The tank has to be cleaned occasionally, the motor oiled, and adjustments and repairs made once in a while, but this is in sharp contrast to what had to be done when ice was handled. Now it is definitely known that the milk will be cooled to the desired temperature within a given time, whether the day is hot or cold. Such is the blessing of automatic control.

Check meter tests on many farms have shown that it takes about 25 kwh-hrs of electricity per can per month to do proper cooling in an electric cooler. In the case of the LaDuc's this means 100 to 125 kwhrs for the 4 to 5 cans cooled. In the locality where they live, only the night's milk has to be cooled as the morning milk is delivered at the plant before nine o'clock. The LaDuc Jerseys produce a total of 8 to 10 cans per day throughout the year.

Now let us do a little summing up and see how ice cooling com-



Above: Putting up ice in the "good old way." **Below:** Milk cooling in the good new way.

pares with automatic electric cooling for the LaDuc's.

In checking these figures you may say you don't have to pay yourself wages, that you do your own trucking, that sawdust doesn't cost you anything, that ice is free, and that you don't have much investment in an ice house. This may be true, but surely your time is worth something, especially now that labor is so scarce and the war needs demand every effort toward increased production. Just preparing the ice, at one-half hour per day, is 105 hours in the seven most busy farm months. That is 13 eight-hour days—almost two weeks. That item alone is worth considerable money to you.

Comparison of Operating Costs

	Ice Cooling	Electric Cooling
Investment in Ice House	$215	
Investment in 6 can Cooler		$235
Depreciation—10 year basis	$21.50	$23.50
Trucking ice and sawdust	50.00	....
Sawdust	10.00	....
Labor—2 men, 10 days, 6 hrs. per day cutting and packing ice—120 hrs. @ 25c	30.00	....
Labor icing cooler tank. ½ hr. per day for 7 mos. —105 hrs. @ 25c	26.25	....
Miscellaneous labor—2 hrs. per month @ 25c for 12 mos.	....	6.00
Electricity—125 kw-hrs per month for 7 mos. @ 2c per kw-hr	....	17.50
Total	$137.75	$47.00

Burgess Book of West Haven with a fifty-cow dairy says he would give most anything if he could get electricity to his farm because he figures it cost him $150 a year to put up ice. Mr. Book will have current as soon as war conditions permit. Meanwhile, he will have to "strain his back" over a cake of ice. Folks with electric coolers are lucky and those who plan to get one are wise.

Blackout Methods

By **BEN MAXWELL**

AUTHORITIES demand blackout precautions for homes in certain defense areas. They suggest the kitchen as a most convenient and useful room for blacking out, but do not propose that folks simply turn out the lights and sit in the dark.

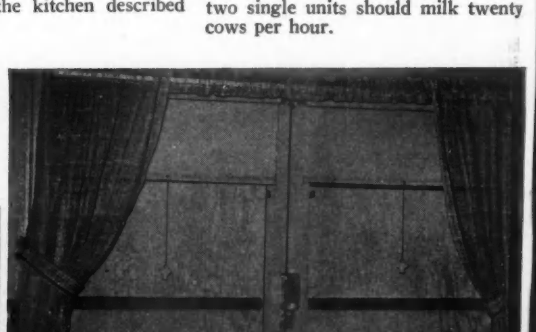
Effective blacking out to permit moderate lighting within may be accomplished easily and cheaply with plywood, strips of thick, black cloth, a pint of linoleum cement and a few common household tools. Supplies for blacking out five windows and two doors in the kitchen described cost $2.65.

Measurements for plywood blackout panels (the reject grade is good enough and had best be cut to fit at the source of supply) are made to fit the recesses in doors and window frames. This will allow a double joint and provide a backstop against which the panel rests.

Strips of heavy black cloth one inch wide are cemented around the edges of panels with linoleum glue. When the panels are pressed against recesses in door and window frames the cloth forms a light-tight gasket between the two surfaces.

Strips of wood one inch wide may well be nailed to blackout panels to prevent warping and provide handles for convenience of handling when blacking out must be speedily effective. Panels not sufficiently tight to remain in place may be securely held by wood wedges inserted where needed.

Tools needed for making the five window and two door blackout panels, easily built in three hours, were a block plane, hammer, scissors and a few shingle nails.



Left: The woman in this farm kitchen is cementing down strips of heavy black cloth that will form a light-tight gasket when the blackout panel is fitted against recesses in the door frame. **Above:** Five windows and two doors were effectively blacked out in this kitchen with plywood panels, strips of cloth and linoleum glue at a total cost of $2.65.

Speedy Milking Best

The Geneva Experiment Station in New York has conducted tests that show milk production to be maintained more uniformly throughout the lactation period if cows were milked with the milking machine in four to five minutes instead of taking nine or ten minutes per cow. They found that cows can be trained to milk out rapidly without a lot of hand stripping. The machine should be removed promptly after the cow has been milked. One operator with two single units should milk twenty cows per hour.

Electrification of Small Incubators

By D. E. WASHBURN,
Agricultural Engineering Div.,
T.V.A., Knoxville, Tenn.

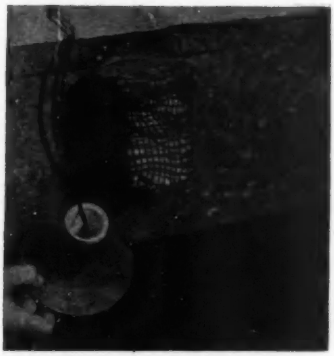


Fig. 1. The hand is holding a four-inch metal box cover (for wiring) equipped with a lamp socket into which is screwed a 200-watt, screw base heating element similar to those used in radiant room heaters. Be sure to get correct wattage for the incubator to be electrified. The oil lamp has been removed and the lamp housing covered on top with metal and asbestos, and the entire housing thoroughly wrapped with insulating material to save heat.

WITH the government asking for an increase in poultry and egg production this year over last, it may be somewhat difficult to secure baby chicks at the time you will want them.

If you have an incubator which was formerly heated by oil, it can be electrified satisfactorily and at a relatively low cost. Parts may be secured for the electrification of these incubators from at least one manufacturer, who will also furnish complete plans for installing the heating-assemblies and thermostats. If the job is done properly, hatches can be secured with the electrical incubator as great as when the original heat source was used. By using electric heat (1) temperatures can be more easily controlled, (2) less attention is required to operate the machine, (3) practically no danger is incurred from fire. There are two general methods by which the machine may be electrified: (1) by placing a screw base heating element in the water chamber of the water-heated incubator, or (2) by placing low temperature coils of nichrome wire in the top of the egg chamber.

Heater for Water

If your incubator is heated with hot water and is of not more than 500 egg capacity, the lamp and its assembly may be removed and replaced with a screw base heating element. Figure 1. For machines from 100 to 200 egg capacity a 200 watt element will be found satisfactory. Note that the water chamber outside the machine has been covered with insulating material and that the top of the water chamber has been covered to conserve the heat given off by the element. A *wafer type thermostat* should be installed with an outside adjustment. Figure 2. (Bi-metal thermostats are not satisfactory for incubators and should not be used.)

A thermostat is essentially a switch which turns the electricity off and on as the temperature rises and falls within the incubator. The wafer of the thermostat should be located as near the level of the eggs as possible.

Heater in Egg Chamber

Another method for electrifying incubators is to place open type low temperature coils of nichrome wire in the top of the egg chamber. Figure 3. This wire should be supported by porcelain insulators. Control of temperature within the incubator is obtained by the use of a thermostat, as described above. In some machines of this type such as the Jubilee, Charters, etc., the entire lamp housing is enclosed within the incubator in a compartment next to the egg chamber, and the heat from this creates the air movement for ventilation. In these cases an auxiliary heating coil should be mounted in the compartment enclosing the lamp housing to warm this space and maintain the necessary air movement, as was supplied by the original lamp.

The incubator should contain two

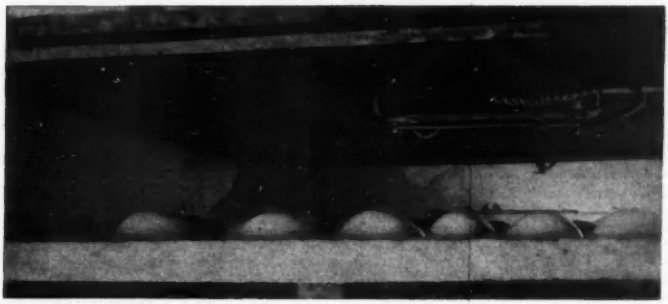


Fig. 2. **Above:** Inside of a hot-water heated incubator showing a wafer thermostat located in the top center of the cabinet. The adjusting screw extends up through the top of the incubator. The thermostat must be wired in series with the heater which replaces the lamp. Fig. 3. **Below:** This shows the inside of a small electric incubator with the thermostat wafer near the eggs and the heating wires built into an asbestos pad in the top. In an old fuel heated incubator, the heating pipes should be removed, insulation added in the top and preferably a piece of sheet metal or asbestos. Beneath this the heating wires should be supported on porcelain insulators or cleats. Use enough supports to prevent sagging when wires get hot.

Fig. 4. The smallest cabinet fan type incubator made. It holds 96 eggs, has a durable heating element and fan for circulating the warm air. Eggs are turned by tipping the trays. A water pan supplies moisture.

thermometers, (1) an ordinary thermometer which has been tested to assure its being accurate and (2) a wet bulb thermometer with the bulb kept moist by means of a wick immersed in water. By the use of this second thermometer an indication of the amount of moisture in the incubator may be obtained. The moisture in the incubator is very important to incubation. The incubator should be set up and a dry bulb temperature of 102° maintained for at least two days prior to the eggs being placed in the incubator. The eggs should then be placed in the machine. It may take several hours for the machine to return to its former temperature of 102°. During the first and second weeks of incubation the temperature in the machine should be 102°, and the wet bulb thermometer should read between 87 and 89°. If the wet bulb temperature reads higher than this, the vent on the machine should be opened to allow a greater circulation of air. If the wet bulb reading is lower than 87 or 89°, a pan of water should be placed in the incubator under the egg tray. From the eighteenth day on the temperature should be dropped to 100° F. and enough moisture should be added to raise the reading of the wet bulb to 88 or 90° F. At this time the vents in the incubator should be opened as much as possible to allow the maximum circulation of air, as at this stage the embryos are almost fully developed and require a considerable quantity of oxygen. Eggs should be turned at least three times every day up to the eighteenth day, when the incubator door should be closed to conserve moisture, and not opened again until the hatch is completed.

More Pigs with Brooders

In recent years pig brooders have become one of the least expensive and most productive pieces of electric equipment on farms in the Middle West. There are various types. Brooders available from manufacturers have enclosed ring-type heating elements operated at black heat and having a long life. Properly designed reflectors direct the heat down and over the floor area where it will do the maximum good.

Homemade brooders are heated with Mazda lamps of 150 to 300-watt sizes placed in RLM or cone reflectors in the top of the brooder. Some growers use CX lamps as heaters. The CX lamp produces a large amount of infra-red radiation, and, if voltages are right, some ultra-violet.

Out in Klamath Falls, Oregon, where farming and cattle ranching is done on a large scale, two growers have been using pig brooders with remarkable success. Both are using 250 watt CX lamps as heaters.

Last year the Patterson Ranch south of Klamath Falls used twenty pig brooders. The CX lamps were placed in 21 inch aluminum dishpans which served as reflectors. Aluminum is the best reflector of ultra-violet, but porcelain or white enamel do as well for infra-red or heat. On the Liskey Bros. ranch east of Klamath Falls, CX lamps are used in cone shaped reflectors. The illustrations show some of the installations on these places.

The pig brooder serves two purposes. It dries off the new-born pigs and keeps them warm and comfortable so they will grow to advantage and not use so much of their food in

. . . . . More on page 29

Left: A line of 65 farrowing pens on the Liskey Bros. ranch near Klamath Falls, Oregon. Each is equipped with a 250-watt CX lamp heated pig brooder. **Lower Left:** Looking into a straw insulated farrowing pen equipped with aluminum dishpan reflected CX heating lamp. The lamp is supported in the corner of the pen behind a guard rail which excludes the sow. **Lower Right:** Meal time in one of the Liskey farrowing pens. After feeding, the pigs slip under the 2 x 6 to the heat, and the sow is free to move about without danger of injuring them.

Time Off

By Mrs. W. T. Sleasman
Powell Butte, Oregon

A contest letter submitted last June. Some excellent pointers on saving time and labor, regaining health and enjoying life by making electricity work for you.

HAVE you ever gone deeply in debt, and needed plenty of time to come out on, and then suddenly found that your health was failing and you needed still more time in which to recuperate?

We found ourselves in just such a predicament three years ago. We made the necessary down payments on a $12,000 farm, and we certainly needed time and good crops to make up for the balance. But we forgot to put a value on good health.

Within two and one-half years, we had to undergo three major operations, and *how* we needed time off for rest! Therefore, when we couldn't work, we spent our time in planning how to make our future work easier in order to be able to stand up under the load. Electricity was the answer to it all.

Water System First

First we installed a water system in the house. My, of all the time and work this took off of *my* shoulders. No more lifting heavy buckets of water and trotting back and forth from the stove to the sink, and back to the pump. Walking or lifting was something neither of us were able to do for quite some time, so this solved part of the problem. This also furnished water for a shower, which the hired men appreciate in the summer time.

Next came the electric plate. It has saved a great deal of time and money. In the winter we keep a fire in the heater and use electricity for our cooking. There is only one stove to chop wood for. In the summer I can sit in a cool kitchen and prepare my fruit and vegetables for canning, then pack them in the boiler and turn on the heat. Electricity does the work and I lie down and rest. There isn't any wood to shove in the stove every few minutes, and the kitchen remains cool.

Electricity does the work and I lie down and rest.

Instead of my husband chopping wood all evening to last for the next day, he spends this time in town studying electric welding. Some day he intends to have an electric welder of his own for the farm.

Next came the refrigerator. Truly this is a time and money saver. My, how many women walk miles each day putting away butter and leftovers in cellars and out-door coolers. We didn't have enough room in our kitchen for a refrigerator so we cut out an arch between the kitchen and bedroom, and put the refrigerator in there. It is enclosed in the back just like a clothes closet. Therefore our bedroom is not mussed up, and yet our refrigerator is in the kitchen.

Electric Brooder Beats Hen

The Electric Brooder certainly shames the old setting hen when it comes to efficiency. I have not lost a chick and they are a month old. We have been gone for days at a time—from sunrise to sunset, yet the brooder never varies. I never worry about fires breaking out as I did with the coal brooder, neither do I worry about the old hen taking them out in the wet grass. Because I know they are warm and dry under the electric brooder, I can relax and rest as my chicks grow.

When other farmers are burning the dead grass from their irrigation ditches, we set back and wait until the crops are in and the grass begins to hang over in the ditches, then we just stake out a one-wire electric fence and turn the cows up the "lane." We have several of these temporary lanes and one would be amazed at the time and pasture saved by letting the cows do the work. Why carry hay to cows when they would rather gather their own feed—and it is so much better for them, too. We had a calf that thought it could continue jumping over, or crawling under the electric wire. Instead of putting a big bundlesome yoke on its neck, we just made one of medium-heavy wire with rather long "pokes." I can assure you it hasn't tried it since, as either the top or lower "poke" always manages to make the contact, to the calf's dismay.

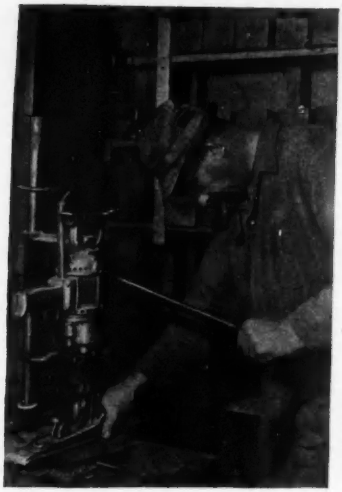
Control for Hungry Hogs

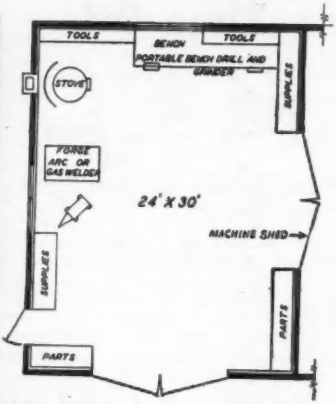
Have you ever tried a long, metal rod with a wood handle—to lean against an electric fence wire, with the end in the hog trough? We have found that it saves time, as we are able to pour the milk in the trough without having to fight them back. One mouth full of "charged" milk and the hogs politely stay back until we are through.

We have an extra electric motor, with bolts attached—all ready to fit on to the sickle grinder, the post drill, or the electric fan for the hay mow. Then, in my husband's spare time, he is working on an electric, rotary lawn mower, and has it about completed. Before fall he expects to have his potato conveyor completed. We realize that good laborers will be at a premium this fall, therefore time is important to the potato grower. It generally takes from four to five men on a truck to deliver the potatoes from the field to the cellar, and we have found that a great percentage of our potatoes have been damaged by careless handling when the men throw the sacks off the truck and into the bins. We think this potato conveyor will take the place of two men and save a great deal of time and hard labor.

We are just young farmers, but we intend to enjoy electricity *as we grow old*. We are finding time for many things such as vacations, fishing trips, time to recuperate and time for study.

We are finding time for vacations and fishing trips.





Above: Plan for a convenient shop adjoining a machine shed. Note large doors for bringing in machinery. Left: A sturdy portable drill being used on a bench stand.

Farm Shop as War Aid

By HOBART BERESFORD

THE war program demanding increased farm production with a limited supply of new farm machinery will call for increasing repair and maintenance. Good shops, well planned, are going to be needed. Such a shop adequately equipped with tools, and supplied with electric service, means quick labor-saving repairs. It also permits the construction and maintenance of special equipment to meet the individual farm's needs.

A separate room or building is the ideal location for a shop. It aids in maintaining order and avoids loss of time, materials, and machine parts when repairs are being made. Plenty of room should be allowed for repair work on the automobile, truck, tractor, or farm machines, with adequate work benches, storage space for supplies and materials, and racks or cabinets for the tools and equipment.

Keep Tools and Supplies Ready for Use

Most farm machines come equipped with a set of the necessary tools such as special end-wrenches and the odd size wheel cap wrenches. These tool sets should be marked and kept in the shop tool rack or kit for field use. In addition, the following tools are needed for the maintenance of farm machinery and equipment.

Wrenches, socket set, crescent, 2 pipe.
Saws, rip, crosscut, and hack, with adjustable frame and blades
Hammer, claw 1¾ pounds, ball peen 2 pounds, sledge 8 pounds
Files, assorted sizes and file card
Punches, center and drift, assorted sizes
Chisels, cold and wood, assorted sizes
Brace and bits, assorted sizes
Screw driver set
Steel square, try and miter
Steel tape
Pliers, plain and electrician's
Soldering iron
Tin snips
Blowtorch
Wrecking bar
C-clamps
Hydraulic jack, bar and chains
Paint spray outfit or brushes
Bench grinder with single wheel
Portable electric drill or post drill

Electricity Serves the Farm Shop

Lighting in the farm shop should include steel enamel reflectors over the workbench and the general work area. A trouble light with a bulb guard, glare shield, shockproof socket, and hook should have about 20 feet of rubber-covered cord for convenient use. Another type of trouble light or work light is the new flood or spot lamp, which may be used in an adjustable socket mounted on a "roll-around" caster base. This light is adapted especially to repair and overhaul work on tractors and farm machines. In addition to the lighting circuits, the wiring in the farm shop should include convenience outlets for the trouble lights and the portable plug-in tools, such as the electric grinder and drill. A stand-by circulation electric heater similar to those sometimes used for the laying house or brooder room is an ideal way to keep the farm shop warm during cold weather.

Motor Driven Grinder Saves Time

The portable bench grinder is the No. 1 power tool in the farm shop equipment list. Two general types of grinders are available, one with the grinding wheels mounted directly on a 3,600 rpm motor shaft and the other with a belt driven wheel assembly and a separate motor. This type of grinder can be arranged for portable motor application. However, for the frequently used bench grinder it is recommended that a separate motor be purchased. Another advantage of the belt driven grinder is that a V-belt may be used giving greater clearance on either side of the wheel which allows freer manipulation of the sickles or blades as they are being ground.

Portable Drill Has Many Uses

The portable electric drill with bench stand is the second power tool on the farm shop list. Portable drills are available in various sizes but the one recommended for the farm shop should be at least ¼-horsepower equipped with a ½-inch chuck and operated at a full load speed of 500

Bench saws and hand saws may be driven by ½-hp motors. Especially useful when building or in making crates, nests, etc.

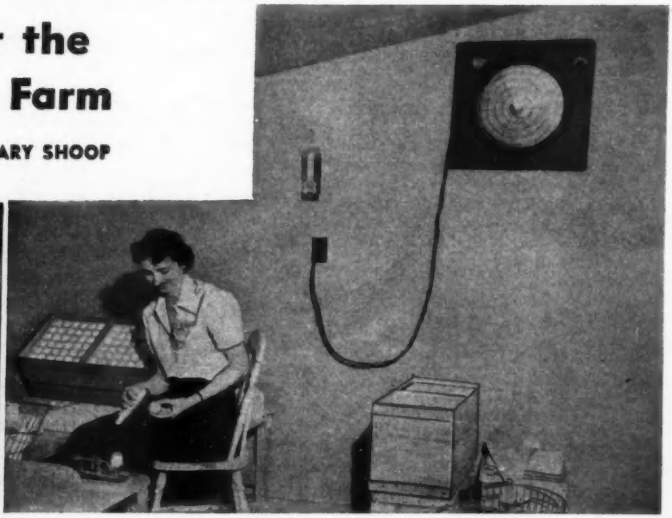
rpm. These drills usually come equipped with a 20-foot rubber-covered cord and an additional 20-foot extension cord will be found convenient for use when the drill is needed for farm machinery repair. In addition to the portable drilling and bench work, the electric drill can be used with a cylinder hone or valve refacing stones. A special kit including stones, cleaners, and wire brushes will save a great deal of time and labor for engine valve grinding and repair.

The portable ¼-horsepower motor finds a number of applications in the farm shop. A forge blower can be made from an old automobile fan and brake drum housing and driven by means of a V-belt. A battery charger can be made from an automobile generator and a V-belt drive application to the ¼-horsepower motor. The small power hack saw or crosscut wood saw can be constructed using an automobile worm type steering gear for the speed reduction required.

A portable paint spray outfit may be operated with a ¼-horsepower motor and used for painting farm machinery or farm buildings. The portable air compressor unit may also be used for pumping up tires or operating air powered grease guns for servicing farm machines. A bench drill, either purchased or made from pipe fittings and equipped with a ball bearing spindle and step groove pulley can be made a part of the regular power tool equipment. A small circular bench saw in the shop will be found a great convenience for building construction or maintenance.

Equipment for the Small Poultry Farm

By MARY SHOOP



Left: H. N. Barbour feeding a fine White Leghorn flock. **Right:** Mrs. Barbour grading eggs in the farm's modern egg storage room. The plug-in evaporative cooler is shown on the rear wall.

OVER the period of a year before he established his poultry farm near Upland, Calif., H. N. Barbour pored over publications on the subject of poultry and visited successful ranches all over Southern California. As the result of this practical research, he made his ranch all-electric—and its continuing expansion demonstrates the wisdom of his choice of equipment and the other scientific principles on which his progressive small farm operates.

Begun as a part-time venture in connection with his job with a local dairy, the farm has proved so successful that he is giving it his full attention. Mrs. Barbour is his able assistant. They received their first birds about two years ago—600 pullets from three hatcheries. They now have about 1,000 White Leghorns and Barred Rocks, and are building their own pedigreed strains of each, with breeders averaging 200 or more eggs annually. New blood in the form of pedigreed cockerels is introduced regularly. The farm produces eggs for the market, as well as hatching eggs and baby chicks.

The success of electric equipment in poultry farming on a relatively small scale is indicated on the Barbour farm. An electric incubator with a capacity of 2,700 eggs hatches the eggs. Chicks spend their critical first weeks in electrically heated outdoor brooders, of which three are in use.

"My experience gives me personal proof of what so many other poultrymen told me—that electric brooding is best for good all-around results," Mr. Barbour says. "Its mortality rate is very low. My average stays down around 2%, and one memorable time I started 200 chicks and took out 200 at the end of the brooding time!

"I like the even distribution of heat in electric brooding, and its safety.

The Barbours' egg storage room is a model of modern design. It is a small wooden building completely insulated inside with insulating board. In addition, the roof has 3 inches of rock wool insulation. An electric evaporative cooler draws all entering air through a moist fibre pad. (Most effective in the drier climates. Editor) On hot days, the temperature has been reduced as much as 20 degrees, and not a single market egg was graded out last summer. The cooling system is also of assistance in holding hatching eggs.

Additional profitable uses of electricity on this modern farm include use of artificial light to supplement daylight in laying houses where hens produce eggs for the commercial market, and floodlights to provide protection against night prowlers.

Electricity Replaces Labor

Letters from Farmers and Farm Women Telling Their Experiences in Using Electricity to Replace Labor Drawn Into The Armed Services or War Industries. Winning Statements in Our January Contest.

First Prize

• "We replaced labor with electricity on our farm by purchasing a milking machine which made it possible to dispense with the services of one $70 man in the dairy.

"The use of electric fences eliminates hire of labor for cutting posts and for constant repair required by old-time fences.

"The utilization of electricity in our barn and house has meant a saving of manpower and money.

"The milk is also cooled by electric refrigeration and an electric water heating system is used to maintain sanitary dairy equipment. These two electric units mean a low bacteria count bonus of $50 each month on our income.

"My father, young brother and electricity cultivate 127 acres, maintain an "A" grade dairy of 30 cows, and still have time to serve at the community airplane observation post in the defense of our country."

HELEN M. STROUD,
Route 2, Cochranville, Pa.

Second Prize

• "We replaced labor with electricity on our farm by wiring our barn so we can do all barn chores before daylight; buying electric motor for our separator, saving one man turning by hand; with our milking machine I can milk 16 cows quicker alone with electricity than the hired man and I both, by hand."

J. B. SHEFFIELD,
Route 1, Clarion, Iowa.

The Five $3 Award Winners

• "We replaced labor with electricity on our farm (1) by having lights in the barn, making the hours for stock care longer. (2) Water is pumped by electricity, saving many hours of manual labor. (3) This year we have no farm hand or help in the house, as electricity is my helper. We have arranged to farm 90 acres, care for 12 head of cattle, and 7 sows and pigs, in the hours left after an 8 hour defense job in town is finished by my husband; thanks to electricity."

MRS. CLARENCE OBERMEYER,
Route 2, Kokomo, Indiana.

• "We replaced labor with electricity on our farm by using an electric egg cleaning machine, cleaning three crates of eggs—30 dozen each—to one crate done previously by hand, and at a cost of about 5c for 9 hours. Also by the use of an electric egg candler and grader, combined, two people can grade and pack 6 to 8 crates per hour."

MRS. FORREST BROWNELL,
Johnsonville, N. Y.

• "It used to take four men to dip water out of ditches to run four carts to haul water during dry weather to plant tomatoes, cabbage, bell peppers and egg plant. I installed an automatic electric water pump and large overhead tank, and now the ditch dipping is over."

CLIFFORD O. NUNGEZER,
Route 1, Box 275,
Charleston, S. C.

• "We replaced labor with electricity on our farm with a milker, washer, vacuum cleaner and iron. They take the place of a maid at $24 per month and a man at $60.—And we cannot get help at all."

MRS. ORVILLE BARKER,
Route 1, McConnell, Illinois

• "We replaced labor with electricity on our farm by attaching a ¼ hp motor to our lawnmower. It used to take 3 hours and cost 90c a week. Now it takes 2 hours and we do it ourselves. Also had to cook for as many as 10 hired men, with two babies to care for. It cost $2 per week for a woman to do my laundry. Got me a washing machine and now I do it all alone. We were paying a hired man $90 per month just to do the milking. We got us a milking machine. Now we don't have to hire any help. I was sick a week and my wife did the milking."

M. BAIROS,
Route 1, Chowchilla, Calif.

These Also Tell Effective Methods of Replacing Labor. Each Was Awarded $1.

• "We don't drive our cows to the ditch. All we do is turn the switch."

CHARLES BURTON,
Route 1, Cedar Lake, Ind.

• "We replaced labor by installing five milker units. It used to take four men and a 15-year-old boy two hours night and morning to do the milling which is now done in 1 hour and 15 minutes by two men."

MRS. RUSSEL ROBERTS,
Route 14, Box 578,
Indianapolis, Ind.

• "I use two motor-driven elevators to transfer grain from one bin to a fanning mill, and from the fanning mill to a second bin. The transferring in bad weather prevents weavil and musty grain and saves refuse grain for scratch feed while giving me a higher quality for marketing. One man does the job and I save the labor of two men."

JAMES BLAINE FRAZEE,
Markleysburg, Pa.

• "We replaced labor on our farm by using a milking machine to do the milking. We can milk 25 cows in less time than two men did it by hand."

MRS. J. W. BLANKENBAKER,
Route 2, Jeffersontown, Ky.

• "We replaced labor on our farm with a three-quarter horsepower motor. Using it for elevating grain, one man and the motor replace 7 to 8 men and do the job in one-third the time at much lower cost. It also operates a large potato grader and leaves free one extra man at the picking table."

FRANCES CUMMINGS,
Route 1, Box 102,
Willard, Ohio.

• "We replaced labor by buying a washing machine, then a pressure pump and an electric water heater. Now my washing is done in a quarter of the time. My husband used to help before electricity came. Now I have time to help him."

MRS. W. N. KIEFFER,
Route 2, Lockport, N. Y.

• "It took a hired hand three hours each day to fill 60 drinking fountains of 5 gallon capacity for 2,000 hens by hand pumps in the coops. I installed a pump in the cellar and had pipes run directly to my two big coops. The electric pump does the job in one-third the time, saving 730 hours per year, to say nothing of the increased egg production I've noticed since the hens have been getting clean, fresh water early each morning."

A. M. VITALE,
R.F.D., Lincoln Park, N. J.

• "A local feed mill gave me a dis-

carded elevator belt and buckets. With this and pulleys and shafting which I had lying around, I built a grain elevator at an expense of only $1 for a speed-reducing shaft. This takes the place of three men at threshing time as it elevates the grain direct from the thresher to bins 20 ft. high. I use a ¾ hp motor."

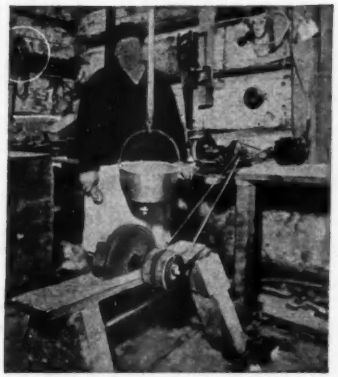
O. G. SWARTZ,
R.F.D., 3, Medina, Ohio

• "We use our portable electric hand drill for churning. We took a board about 2 in. thick and made a top to fit over a 3 gallon crock. This top with a hole in the center supports the drill. By fitting a homemade paddle in place of the drill bit, I make 6 or 8 pounds of butter and think nothing of it."

MRS. ALMIRA GARDNER,
Route 3, Townsend, Del.

A Motor—The Farmer's Partner in Production

By **L. L. KOONTZ**, Appalachian Electric Power Co., Pulaski, Va.



Above: Mrs. Giles, with the aid of a fractional horsepower motor, can do a lot of the jobs around the farm that men usually do. Note the speed reducing arrangement for the grindstone. **Below:** Mrs. Henry Buchanan of Tazewell County, Va., says this small motor saves husband a half day twice a week.

WITH the increasing shortage of labor on the farm, the small electric motor is likely to be a most welcome farm partner in 1942. It is a real time and labor saver. On jobs like separating cream it will definitely give better results than hand methods. On many jobs it will release valuable time and labor for productive effort elsewhere. It should be remembered, too, that the farm man or woman doing work the small elector motor will do, is working for less than 3 cents per hour—an inconceivably low wage for Americans.

Here are a few reasons why the electric motor is the farmer's logical and practical partner in increased production:

1—ADAPTABILITY. It can be used on many farm jobs. A variety of speeds are readily obtainable by changing pulleys.

2—LOW INITIAL INVESTMENT. The cost of a large portable farm electric motor is less than one fourth that of a small farm tractor. The cost of small electric motors gets down below $10.

3—ECONOMICAL TO OPERATE. Unlike a horse or hired hand it only eats when it works and then only in proportion to the work it is doing.

4—LOW MAINTENANCE AND DEPRECIATION. Practically no repairs are necessary with reasonable care of a motor.

5—IT HAS A CONSTANT, EVEN DELIVERY OF POWER.

6—ITS POWER OUTPUT DOES NOT DECREASE WITH AGE.

7—MOTORS ARE SMALL AND COMPACT, REQUIRING MINIMUM FLOOR SPACE.

8—PORTABILITY. The electric motor can readily be made portable by the farmer, after which it can be easily handled by one man.

9—IT IS CLEAN AND SILENT IN OPERATION.

Above: A quarter horsepower motor does this job easily and replaces a man. This is J. H. Bundy of Russell County, Va. **Below:** Mrs. E. M. Henderson of Giles County, Va., uses this small motor for operating both the separator and churn.

10—SAFE. (a) Push button control eliminates cranking and other starting difficulties.

(b) Poisonous gases and fumes eliminated.

(c) Fire hazard eliminated.

11—ELIMINATES ADVANCE PURCHASE, STORAGE AND HANDLING OF FUELS.

12—RELEASES OTHER POWER UNITS FOR OTHER JOBS.

13—FACILITATES MORE EFFICIENT USE OF LABOR.

14—SAVES LABOR.

Farmers wishing advice on the selection and use of electric motors can usually get it from their local power company or co-op representative, county agent, agricultural instructor or the State extension agricultural engineer.

THIS, TOO, IS MECHANIZED WARFARE!

We're fighting a new-style war.

It's a *mechanized* war. In the field, it's a war of swift-thrusting tanks and deadly bombing planes . . . of camouflage and combat cars, of armor plate and automatic rifles and a hundred vicious engines of destruction. It's a war of new tactics, new strategy, *new equipment*.

And it's the same kind of war at home.

American industry has precision machinery and manufacturing methods that are the envy of the world. *We'll win the battle of production*. American agriculture has mechanized equipment and modern farming tools that have set new standards of farming practise. *We'll win the battle of food*.

Electricity will help to win that battle.

Dependable electrical power means greater farm *efficiency*—more work accomplished, with less human labor. It means higher farm *production*—more food and better food from the same amount of land. And it means *comfort* and *pleasure* for the men and women who fight the battle of food—the rest and relaxation that make good work and hard work possible.

Modern electrical farm equipment helps the nation. It helps *you*. When you buy anything electrical, make sure it's marked *Westinghouse*—the name that stands for the highest development of all the good things that electricity makes possible.

Westinghouse

Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.

ELECTRICAL PARTNER OF AGRICULTURE

Electrical Housekeeping

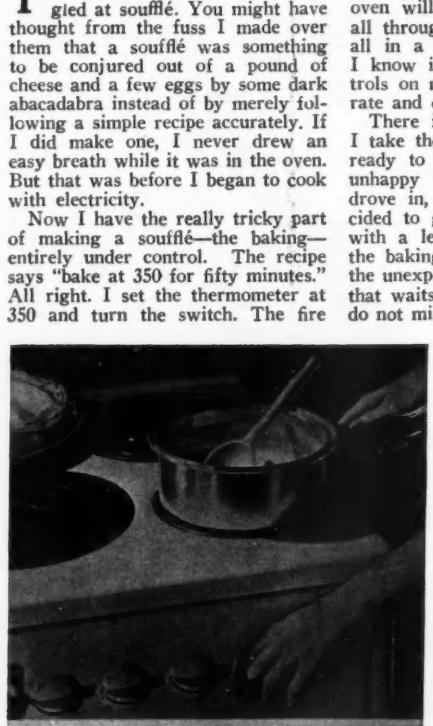
Edited by **GAIL MEREDITH**

Soufflé for Supper

THERE was a day when I boggled at soufflé. You might have thought from the fuss I made over them that a soufflé was something to be conjured out of a pound of cheese and a few eggs by some dark abacadabra instead of by merely following a simple recipe accurately. If I did make one, I never drew an easy breath while it was in the oven. But that was before I began to cook with electricity.

Now I have the really tricky part of making a soufflé—the baking—entirely under control. The recipe says "bake at 350 for fifty minutes." All right. I set the thermometer at 350 and turn the switch. The fire tending is out of my hands. That oven will stay around 350 degrees all through the baking. I don't get all in a dither worrying about it. I know it will, because those controls on my electric oven are accurate and dependable.

There is one other thing. When I take the soufflé up, the family is ready to eat it. After one or two unhappy waits while tardy guests drove in, or someone suddenly decided to go down to the mail box with a letter, I've learned to time the baking with a little leeway for the unexpected. Now it is the family that waits, not the soufflé. But they do not mind. I have only to hiss the word in the morning, and every one is in his place, fork in hand, at night. Soufflés are that popular at our house. We have learned that soufflés are not for laggards. You eat them when they come out of the oven.



My Favorite Soufflé

My favorite soufflé, the one I bake the oftenest, and bring forth most proudly to my dearest guests is made from a recipe sent me by Dorothy Grieg of Philadelphia. It is as easy to mix as a batch of biscuits, and it comes out of the oven as light as a dandelion puff, and so tender it literally melts on your tongue while you are savoring its sharp, delicate flavor.

This isn't any credit to me. I'm just a run-of-the-mill cook, following directions. You can make one just as brown and crusty, just as delicately delicious, if you try. All you have to do is to follow the recipe and time your baking and eating.

The ingredients are:

2	tbsp. butter
3	tbsp. flour
¾	cup hot milk
½	cup condensed tomato soup
1½	cup grated cheese
¼	tsp. dry mustard
4	eggs, separated

To make it, begin by melting the butter. Then add the flour and cook them together until they are frothy. Next add the hot milk, cooking until the mixture is thick. Stir in the tomato soup and the grated cheese, and heat until the cheese is melted. Then take the dish from the fire and add the mustard, and the egg yolks, one at a time. Beat each yolk into the mixture well before you add the next one. Beat the egg whites until they are stiff, but not dry, and fold them in last. Pour it into a well-greased casserole and bake it fifty or sixty minutes, till it is firm in the center.

Miss Grieg told me to put the casserole in a pan of water during the baking. I have cooked my soufflé in a very heavy, brown earthen dish we got in Porto Rico because I like to serve them in that. They never seem to need the water bath to temper the baking. If I were cooking in a thinner casserole, I should put the dish in water.

Don't Open the Door

I leave the oven door shut until the soufflé is nearly done. By rigid self-control, I learned long ago not to peek. Opening the oven door shows a woeful lack of faith in the recipe, the oven, or the clock, perhaps all three. It may satisfy our curiosity, but it lets cold air swoop in, and that calls on the thermostat for more current. That is wasteful, and it may make the current stay on too much of the time, long enough to let the food on the lower shelf burn on the bottom sometimes, at a temperature we had every reason to think safe, and that would have been safe with the heat shut up in the oven.

When the soufflé is firm in the middle, I take it out and serve it with a green salad, fresh rolls and a pot of steaming coffee.

If you aren't eating meat during

Lent, you can make delightful soufflés with salmon or tuna as well as cheese. One of my friends always makes a spinach soufflé as a special treat.

But cheese or salmon, spinach or tuna, any soufflé is a dish to be proud of serving. Get your family under control and make sure of your baking temperature. Remember that it isn't what goes into the oven, but what comes out, that counts at the table.

Sewing Machine Earns Money

By **MRS. ZULA HALL**
Crawford, Nebr.

If "a penny saved is a penny earned" is true I have earned many a pretty penny with my electric sewing machine. In the first place I love color and get tired of looking through the "stout" section in search of something new. (Can be had in navy, brown, or black.) Consequently I like to design my own clothes in becoming colors of my own choosing. Just one of these costumes bought on the market would cost as much as my whole year's wardrobe. At the same time I select good materials so that when

they begin to wear, as stout sizes do pretty quickly, I have lovely materials for the children's clothes and so make them do double duty.

Then there is the old saying about the stitch in time, and my electric sewing machine is a first aid on mending day. Patches stay "put" the electric way, and with the darning it is a whiz. My girls learned to sew seams by making nine patch-quilts from the left-overs and the combination of piece-bag and electric sewing machine has solved many a Christmas problem.

And there was also the time when my husband had sold a large quantity of grain for seed and promised delivery on a certain day. When they got out the grain sacks they discovered the mice had chewed them full of holes. It was too late to get more and it would take days to sew them all up by hand. I told them to bring them in to me and I got out my electric machine. On my machine there is a little screw which when loosened enables the needle to sew in any direction . . . backward, forward, or to either side. I slipped the sack over one end of the machine and began to darn. One of the younger boys stood near to take the sacks as fast as I finished them and while I was doing another the older boys were filling them with grain. When the man came for his seed it was almost ready and while I finished the last two or three they were busy loading. When it was all over my husband came in and said, "Well, mother, your electric machine paid for itself today. If we hadn't had that grain ready we would have lost the sale for he came a long way to get it."

New draperies, gay pillow tops and even rag rugs can be made quickly and easily and these things are expensive to buy.

I had never thought about this way of "earning" money before but now I am convinced I have earned a lot of it by owning an electric sewing machine.

Their Long, Long Life is NOT an ACCIDENT

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Product of General Motors
Are Built for Hard Work!

FOR EXAMPLE, THE ECCENTRIC DRIVE BEARING DIAMETER IS LARGER THAN IN MANY LARGE AUTOMOBILE ENGINES

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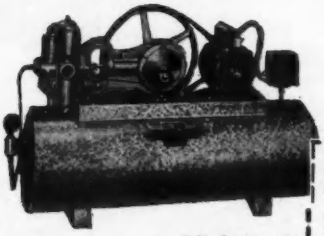
A DELCO WATER SYSTEM Does the Job Better

Its big job is to furnish running water inexpensively, both to save your valuable time (it takes 3 hours to pump by hand the water a Delco Water System will deliver to your faucets for 5c), and to increase your production of milk, eggs, pork, and beef by enabling you to have drinking cups for cows and faucets in the other buildings.

Noted for quiet, trouble-free service and economical operation, Delco Water Systems are made in all sizes from 180 to 1600 gallons per hour capacity, and present a real General Motors Value.

Get the facts and you'll buy a Delco Water System. It will make you money by increasing production . . . and pay for itself by saving time. Ask your Delco dealer or send coupon. Buy on F.H.A. terms if you wish.



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An Easier Way

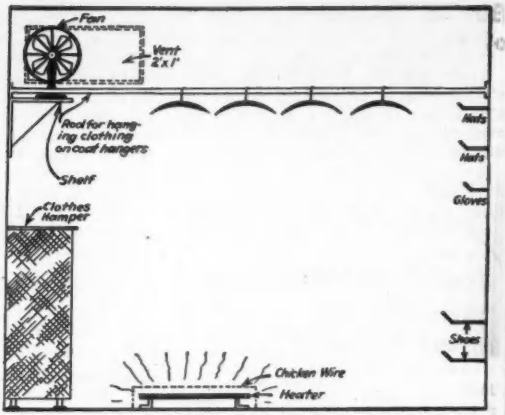
(December Contest Letter)

I have learned this easier way of doing a hard job this year, or rather, I have let a one-dollar electric fan, a one-dollar electric heater, and 96 sq. ft. of ⅝-inch insulating board costing about $11, along with five cents worth of nails, solve a psychological problem.

Definitely the hardest job on a farm with hired help is that of the farm housewife who must prepare the extra places at every meal and make the extra beds, but these are the tasks which she willingly does as part of the "board and room" agreement with the hired men. However, the unsung part of her labor and the most disagreeable is the picking up of men's clothes dropped around the kitchen in winter to dry, the muddy, barnyard overshoes cluttering up the hall, the sweaty laundry strewn about the bedrooms, and the towels left wet in the bathroom. This work makes the housewife feel that she is not the hostess of a busy, well-run home, but a menial servant in a male-dominated house.

But even the most careless of men are willing to put away their working clothes if there is a definite place and a right place for them, and this is how I solved my problem.

Directly off the entrance hall is the familiar, farm "washroom"—ideal in summer for the men, but, as is usually the case, in the winter unheated. Along one wall I partitioned off a closet of insulating board 9 by 3 feet with a door of the same material in the long side. In this closet are hangers for coats, wire racks for shoes and gloves, hooks for hats, and a wire clothes hamper for laundry. And on the floor, protected by chicken wire, is an electric heater. On a shelf near the ceiling is an electric fan which draws air through a 1 by 2 feet inside-wall opening with an adjustable door.



Shelves, hangers and hamper may be arranged to fit space. Place an air outlet near the bottom for circulation.

Here then is my well-ventilated "dryer" where men can put their cold, wet clothes at the end of the day, out of my sight and out of my mind, and where they will find them in the morning warm and dry. And here wet laundry will not mildew between washings even in the summer when, of course, the electric heater will not be necessary.

The cost of heating this closet varies with the weather. Most days only the fan is needed.

I'm pleased with the results of this project, but do you know who is the more pleased? Of course, the men.

MRS. ROBERT C. STILES,
Quimby, Iowa.

Just Plug In
THIS SHALLOW WELL
Water System

IT GIVES EXTRA WATER
at No Extra Cost

Just attach this Fairbanks-Morse Home Water System to your well, couple to your piping system, and plug in to an electric outlet. It's as easy as that to install, for it comes completely assembled, completely wired. And it supplies water at sustained pressure for from three to six taps . . . operates quietly, automatically. There's *only one moving part*—no belts, no gears, no pump leathers to wear, no valves to stick. See your F-M dealer for a demonstration, or write to Fairbanks, Morse & Co., Dept. C107, 600 S. Michigan Avenue, Chicago, Illinois.

The Only COMPLETE *Line of* HOME WATER SYSTEMS

F-M makes all types—ejector and piston—for shallow and deep wells—in a full range of sizes from 200 g.p.h. Unbiased advice . . . a name that means *dependability!*

FAIRBANKS, MORSE & CO.
Manufacturers of Precision Equipment for 112 Years

Why I Would Like An Electric Water Heater

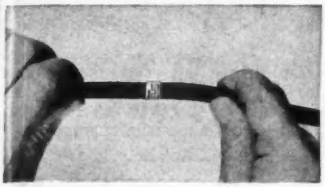
When I want to do the family washing the first thing I have to do is find out whether my son or husband can help me next day. Next, we have to run down our mule and borrow a horse (or else use the car and later clean the car), harness, and hitch them up to a wagon; drive a half mile from the house and get brush or wood for fuel to heat the water. Then the iron kettle has to be washed and hung up, fire built and ten pails of water pumped, carried and dumped into the kettle. The fire has to be replenished until the water boils. Then the water has to be dipped up, carried to the house and emptied into the washing machine. All of this takes time.

If I had an electric water heater, I could wash any day I wanted; by pressing a button, the water would be heating while I get breakfast and eat, a hose would eliminate all water carrying and I'd be through washing by the time I now get started.

MRS. JACOB BARGMAN,
R. 2, Yukon, Okla.

Better Take Care of Your Electric Cords

Two materials which are very essential to the conduct of the war, are copper and rubber. They are so essential that most of the available supply has had to be ear-marked for

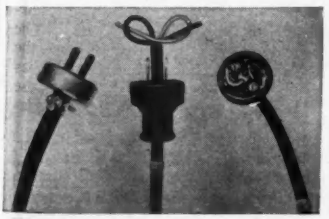


Underwriters Label—This is the mark of cords which comply with safety rules of Underwriters' Laboratories. Look for the label on the braided as well as the rubber types.

war use. The shortages thus created are now restricting the manufacture of rubber-insulated wires and cords, which are made almost entirely of the two materials. The fact is that as soon as the available supply of rubber sheathed cords is exhausted, there will be no more for civilian use until the war is over. There will be cords available all right, but they will be the braided, rather than the all-rubber types.

Braid Covered Cords Available

All of the braided types of cords are included in the label service of Underwriters Laboratories, and those which carry the Laboratories' bracelet-like label will be found adequately safe. For lamps and radios and household appliances, the braided types will serve just about as well as the rubber types. For outdoor use, however, it will have to be acknowledged that the rubber-sheathed types have definite advantages. While braided types are made weatherproof for outdoor use, they do not have quite the same ruggedness,



Strain relief at plugs—At left is built-on clamp; in center, a knot tied in conductors; at right, conductors carried around attachment blades.

and consequently will wear out sooner. If you already have some good rubber cords, take care of them.

Rubber cords are best suited to use out of doors and in the barns where dampness may be present because the rubber sheath is impervious to water. If the braided types are used in such locations, provision must be made for keeping the wire dry.

To keep the rubber cords in the best possible condition, do not subject them to more mechanical abuse than necessary. Avoid sharp kinks and bends; they are hard on the fine copper strands making up the conductors. For storage, lay the coil of wire flat rather than hanging on a nail or hook. Store the cord out of sunshine, because sunshine hastens the deterioration of rubber. Keep the cord in good repair.

Cords usually break close to their ends where the bending is sharpest. By cutting off a short piece of the cord and reconnecting, the rest of the cord can continue to serve. The repair is simple, but it should be done carefully. In preparing the conductor to go under the terminal screw, all of the strands should be carefully twisted together. Soldering these strands together is worthwhile refinement. In placing the con-

"STILL THE BEST"

"When our power line came in, I started looking at all makes of new electric sewing machines. In the end, I wound up with another Singer. It's still the best for my money!"

Available in the U.S.A. only.

"Tuck-away" miracle. Have you seen Singer's newest portable machine that fits into a folding table? The table "extends" to double length for cutting and sewing. Complete outfit folds into a closet. See all the new machines at your nearest Singer Shop, and ask about trade-in allowances. Or, drop us a card for a demonstration in your home. There's no obligation.

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March Contest

At the beginning of the year our newspapers listed in a long column of fine print the jobs in CIVILIAN DEFENSE that need workers.

Perhaps you can do some of those jobs in your community. More than likely the increasing demands right at home on the farm take all your extra time and energy. They are most certainly defense jobs, too. What I can do for defense. That is the subject of our contest letter this month. Perhaps even the thinking about it, and studying about it will help you find ways of doing more. Saving waste paper, salvaging metals, making sure the family eats enough of the right foods, —which of these things are you doing right now as a special service to your country?

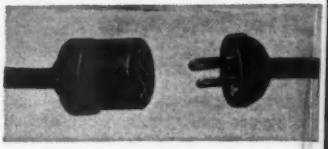
We will pay the writer of the most helpful letter five dollars.

All letters should reach me, Gail Meredith, by March 31, at 700 S. Mills St., Madison, Wis.

ductor around the terminal screw, wind each one in the same direction as the screw will turn in tightening, because in that case the conductor will be drawn closer under the head of the screw. If the conductor is wound in the wrong direction, tightening the screw will force the conductor out from under the screw head.

It is important that some device be employed at the ends of the cord to prevent strain being applied to the terminal connections. At motors, this strain relief may be provided by a clamp. If none is provided, one should be improvised. In the case of a cord coming out of a box, strain may be avoided by tying a knot or by binding with tape. Methods of avoiding strain at attachment plugs are illustrated in the accompanying picture.

If a cord becomes damaged midway in its length, either a splice will have to be made, or the cord cut in two and a cord connector inserted. The rules of the National Electrical Code prefer the cord connector. If, however, the splice is decided upon, be sure that a workman-like job is done, because a poor splice might involve hazard. The first thing to do is to make sure that the cord is disconnected from the supply. Join the wires by first twisting together, and then soldering. Join the second wire two or three inches further along so that the soldered joints do not come at the same place. Cover each joint with rubber tape and then wrap rubber tape over the conductors so as to replace the rubber of the removed sheath. Then cover the whole joint with friction tape.



Cord Connector—The approved method of connecting lengths of cord is by the use of the cord connector.

More Pigs with Brooders

. . . . . Here from page 1

keeping themselves warm. The other purpose is to keep the pigs away from the sow when they are not feeding and reducing the likelihood of their being laid on and killed by the sow. The pigs soon learn to scamper into the warmth of the brooder after they have fed.

The brooders are used for ten days or two weeks after the pigs are born. One or two pigs saved per litter, with the faster growth they make soon makes a nice profit and at the same time helps in the wartime production of more pork without keeping additional sows or providing more farrowing equipment.

George E. Shaffer of McDermott, Ohio, made brooders for his hog house by using lard cans as reflectors for 100 watt lamps. He hung two in the farrowing pen just high enough to clear the sow. With this equipment he saved eleven fine Poland China pigs. It was 13° below zero the night the pigs came, and got down to 20° below.

Neighbors used the old method of taking the pigs to the house and placing them in a box behind the heating stove, then carrying them back to the sow every two hours. One of these neighbors lost seven pigs, one lost nine and another lost twelve. All had the same housing and conditions except for the electric heat. All are planning to use electric brooders for their next litters.

1941 Index Available

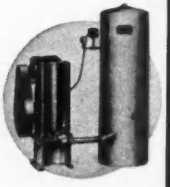
An 8 page index of all articles and items published in ELECTRICITY ON THE FARM during 1941 is now available and will be supplied to readers free on requests mailed to 24 W 40th Street, New York City. The index is the same size as the magazine and suitable for binding with your copies for the year.

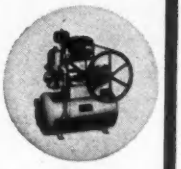
LOW-COST Running Water ANY TIME YOU WANT IT!

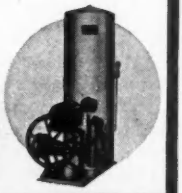
An Aermotor Water System will give you an inexpensive and always dependable source of running water. It is economical in operation. And, being better-built it's longer-lasting.

Aermotor deep well pumps have a completely closed gear case—no dirt or water can enter. All moving parts are fully covered to assure safety. Shallow well pumps are very quiet-running. They have a handy built-in *fresh* water system. The piston rod has a special guard to keep water out of the oil reservoir. Automatic oiling eliminates attention. Any Aermotor system will give you lasting satisfaction.

Learn why the Aermotor is a wise investment. Send for latest book, and see your Aermotor dealer.







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AERMOTOR CO.
2500 ROOSEVELT ROAD · CHICAGO, ILLINOIS

By JEROME J. HENRY

Believe It or Not—About Ripley Himself

Robert L. Ripley will probably never tell these about himself on his regular Saturday night broadcast but here goes anyhow.

He draws upside down.

He was the first man to broadcast ship-to-shore.

He has never played cards.

He lives alone in a 29-room house in Mamaroneck, and a 14-room apartment in New York City.

He has five automobiles, and can't drive a car.

He has been in China more often than in his New York office.

He has visited 201 countries—yet he can't speak a foreign language.

Music Went Round and Round But It Didn't Come Out

Radio fans hear a lot about "mike" fright, which bothers even the most seasoned of broadcasters, but they seldom realize that radio engineers have their own special kind of nightmares—they get gray worrying about the things that can go wrong and throw a program off the air.

Conductor Billy Mills pulled a gag just before a "Fibber McGee and Molly" broadcast that brought practical nervous breakdown to the engineer. Winking at his men, Billy raised his baton and brought it sweeping for the downbeat. And all of the orchestra men went through the motions of playing. The pianist wiggled his fingers over the keys, the trombonists slid their slides industriously, the trumpeters puffed their cheeks and plunged the valves up and down. But everyone was careful not to make a sound.

The control room engineer was frantic pulling levers and twisting dials, trying to find out why the "music" wasn't coming through. Just as he reached virtual collapse, Mills and his boys burst into noisy mirth.

Radio Facts

Listeners thousands of miles away hear radio broadcasts before those in the last row of the studio audience

Blonde Sybil Chism, pretty organist for the "Lum and Abner" program, says she keeps her figure trim by pitching hay on a ranch in California. And even if she doesn't really do it, but only poses for pictures imitating the motions, still she makes a nice appearance! And she certainly supplies excellent organ background for the two homely philosophers from Pine Ridge, Arkansas.

GENERAL ELECTRIC OFFERS A HANDBOOK ON FARM WIRING

FREE

It will help you to get the most from electricity on your farm

Use this handbook when planning new wiring with your electrical contractor or when planning extensions to existing wiring. It contains suggestions for making wiring layouts, for choosing wire sizes, for placing outlets and switches in different farm buildings, etc. It also contains descriptions of suitable wiring materials and handy charts and tables.

Mail the coupon for a copy of this Farm Wiring Handbook. You are sure to find it helpful.

General Electric Company
Section CDW-2613
Appliance and Merchandise Dept.
Bridgeport, Connecticut

Sirs: Please send me Free a copy of the G-E Farm Wiring Handbook

Name.....

Address.....

City.....State.....

GENERAL ELECTRIC

FAST MILKING *DOES* GET MORE MILK!

and **Surge**

Write for Easy Monthly Terms

IS THE *FASTEST* MILKER EVER BUILT!

● Only 4 inches instead of 4 feet to keep clean—easiest to keep clean—cleaner milk. ● It milks faster. ● It gets more milk (less stripping). ● It milks all cows better—a light pull for an easy milker—a heavy pull for a hard milker and a progressively increasing pull on all cows as they are milked out. ● Stimulates each cow to top production throughout her entire lactation. ● Write for the Free, fascinating Surge Catalog. Proof of Superiority. Easy Monthly Terms Offer. HURRY!

BABSON BROS., 2843 W. 19th St., Dept. 5513, Chicago, Ill.

because the radio waves travel with the speed of light—186,000 miles per second—while the air-borne studio sound waves travel only about 1,100 feet in the same time. . . .

The first radio war correspondent was Floyd Gibbons. He reported directly from Manchuria in January, 1932, shortly after the Japanese started their first war of conquest against the Chinese. The newscasts were relayed through military facilities to Tokio and there re-broadcast. . . .

In 1916 David Sarnoff, then the 25-year-old assistant chief engineer of the American Marconi Marc Telegraph Company, wrote a memorandum to his superior in which he proposed the manufacture of "radio music boxes" by which music, drama, speeches, and other materials could be sent direct into homes. At that time voice transmission by wireless was little more than a scientific phenomenon, the only transmitters were intended for wireless telegraphy and there were no such things as broadcasting studios. Yet Mr. Sarnoff outlined virtually the entire procedure of radio broadcasting as it later developed! He is president today of the Radio Corporation of America.

Maybe It Really Happened to Patterson

"Chef" Walter Patterson of the Blue network's "Musical Millwheel" likes to tell this one:

On a vacation trip through his native West Virginia, Patterson came to a bad stretch of road. He leaned out of his car and called to a farmer:

"Can I get through this stretch?"

"Yep," said the native.

Patterson shifted into low gear and went forward—about ten feet—and bogged down.

"Say," he yelled, "I thought you said this was passable!"

"'Tis—with a mule," was the reply.

Merry Macs Are Mad At Cupid

Love, not money, is the root of all evil so far as the Merry Macs of the "New Old Gold Show" are concerned. It has cost them two singing partners already, and the boys are hanged if it's going to happen again.

Judd, Ted, and Joe McMichael went into radio originally as a trio. Singing from Chicago in the early '30s the boys met Cheri McKay, whose vocal talents were such that she was asked to join the group. So the Merry Macs were born.

The singing family clicked immediately and soon received a call from New York for a network commercial. Then Cupid reared his chubby head, and Cheri, forsaking fame for romance, decided to stay in Chicago.

The Merry Macs therefore chose lovely, blonde Helen Carroll, whose name had no "Mc" prefix, but whose voice blended well with harmonies of the boys. Radio and movie offers made life rosy until Cupid bobbed up again. So just before the boys left for Hollywood, Helen announced she'd choose a career in marriage.

In California, the boys found another "blend" girl in Mary Lou Cook, who, too, was no "Mc" but had the other two qualifications: beauty and ability.

Mary Lou is signed to a very special kind of contract. It bars romance indefinitely.

—*I'm proud I am a farmer*—

THE HYDRANT THAT WILL NOT FREEZE

More than 30,000 **VOGEL** Frost-Proof Hydrants are installed in all parts of the country — assuring running water outdoors no matter how cold the weather.

Farmers who have installed these hydrants would not be without them. They are economical—easy to install and give extra fire protection, which means much during the winter months.

Your nearest supply house handles **VOGEL** Frost-Proof Hydrants, or write us direct for complete information.

JOSEPH A. VOGEL COMPANY, Wilmington, Delaware

Saw Gumming as a Side Line

Several years ago, George Riffle of Webster Springs, West Virginia, rigged up a one-half horsepower motor on a 20 inch wood saw to provide stovewood and kindling on his farm. He found that one man could cut as much wood in five hours with this saw as four men could cut in ten hours with two crosscut saws. If the men were hired, that would mean a saving of $5 to $6 for each five hours the saw operated. Furthermore, he found that he could gum and recondition old crosscut saws for his neighbors with his motor driven emery wheel and make money.

When the Monongahela West Penn Power Co. offered prizes for the best letters telling how farmers had used electricity to make profits, Mr. Riffle submitted a letter and won a new one-quarter horsepower motor. Since then he has been devoting much of his time to gumming and filing saws and has been able to make from $6 to $9 per day at it. He is shown with his outfit in the accompanying illustration. Here is what he says about it:

". . . . In my work on my 32½ acre farm since January 1 (to June 4) with a second-hand one-fourth horsepower electric motor which cost me only $5, and a saw gumming outfit which cost me complete (including motor) only $10.65, I have in my spare time 'gummed out' or made out of old crosscut saws, 25 one-man saws, which I have sold to the miners of this community. I have also 'gummed out' 29 crosscut saws for the farmers around here. For all this work I have been paid a total of $97.80—January $20.05; February, $12.50; March $32; April, $10.25; May, $14.25; June 1 to 4, $8.75.

"I would estimate that I did the job on the saws at a saving of $2 on each saw to the miners or a grand total of $50, and the saving of the price of a new saw (from $5 to $9) to each farmer. I have gummed out circular saws as big as 42 inches with the ¼ horsepower motor and a ⅝ inch emery wheel in two hours. The customary price for this work is 10 cents per inch so in two hours I made more than it takes to pay my entire electric bill on all my equipment for one month. One day last summer I gummed out five crosscut saws for which I was paid $5 and then still had time to do four hours work on my farm.

"In addition to the electric motor, our electric equipment includes: a refrigerator, washing machine, churn, iron, radio, fan, corn popper, heating pad, hot plate, lights and electric blower for the workshop."

The Census Bureau gets more than 5,000 inquiries per week from persons desirous of obtaining proof of age and antecedents.

See your DEMING DEALER!

Your DEMING DEALER will show you WHY it pays to own a Deming Water System with features that assure you dependable service at low cost. Ask him about the Deming *Certificate of Guarantee* issued to you as a real protection.

There's just the water system YOU need in the complete Deming line which blankets ALL requirements.

The popular Deming JET-TYPE System is in demand everywhere . . . Ask about it!

FREE GUIDE!

A 48-page illustrated GUIDE that tells you what and what not to do when you select and install a water system. *Write for it!*

THE DEMING CO.
Dept. E. F. Salem, Ohio

☐ Send FREE copy of 48-page Deming GUIDE.

☐ Send name of Deming Dealer nearest my location.

NAME

ADDRESS or R. F. D.

P. O.

STATE

4-H Club President Broods with Electricity

Ann Paulk is President of the Tate, Alabama, Junior 4-H Club. Because of her poultry project, she won a trip to the Short Course at the State College at Auburn. The following is taken from the report she submitted last fall.

"Last year when I decided I wanted poultry for my 4-H project, I was able to get only 38 baby chicks from the hatchery. From these I raised 19 White Leghorn hens. Later in the summer I bought 17 grown hens when the price was low, bringing my flock up to 36, which supplied the family with eggs throughout the year and also paid for the feed.

"This spring I got 104 baby chicks. Instead of raising them in a box, as I did last year, Daddy purchased an electric brooder for $10.00. I was fortunate in raising all except four of these—thanks to the electric brooder. The electric brooder is the most economical way to raise biddies in the long run, as automatic heat keeps the correct temperature all the time, the labor required is a minimum, and the light enables the chicks to feed all night and therefore grow off more rapidly.

"I took them out of the brooder at the age of 3 weeks. They were put into a poultry house built for $10. At seven weeks the roosters were large enough to sell. They weighed about 1½ pounds each. I sold $10 worth and the others were used for the table. I profited enough from the sale of the roosters to pay for the brooder or the initial cost of the chicks. The brooder will be used all through the winter to raise fryers for the market when prices are high."

From ELIZABETH S. DELONG
State Leader, Girl's 4-H Clubs.

MORE WOOL PROFITS *with* STEWART *famous* SHEARMASTER

IDEAL FOR THE AVERAGE FARM FLOCK

Gets 10% EXTRA WOOL ...pays for itself quickly.

Powerful ball-bearing, fan-cooled motor inside the comfortable handle. The ideal shearing machine for the farm flock. Easy-to-use. Rugged, built-in durability. Shearmaster only $26.95 complete with 2 combs and 4 cutters. Slightly higher West of Denver. 100-120 volts. Special voltages slightly higher. At your dealer's. Write for new Stewart bulletin, "Harvesting the Farm Flock Wool Crop," and FREE catalog of Stewart electric and hand-power Clipping and Shearing machines. Made and guaranteed by Chicago Flexible Shaft Co., Dept. 30, 5600 Roosevelt Road, Chicago, Illinois.

Anyone can learn to use it. Professional-type tension control! Plenty of Power!

Over Half a Century Making Quality Products

Keep Cool and Win Championships

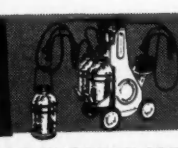
The picture is of Bobby Hardister and his Grand Champion baby beef at the South Arkansas Livestock Show at Pine Bluff. Bobby is a 4-H Club boy from Reydel, Arkansas. The unusual thing about Bobby and his prize beef is the way he used electricity in fitting him.

It gets hot in Arkansas and the heat is especially inhibiting to the appetite of a fat steer. So Bobby rigged up an electric water pump

and pumped water out of the bayou over the roof and sides of his calf shed. He also gave the calf frequent cooling hosings. Then he hooked up his one-third horsepower motor to an old automobile fan and added a cooling breeze to the baths. The fan overloaded the motor and blew a fuse, but that was easily remedied. And the calf ate and grew fat and Bobby topped the show at Pine Bluff.

★ *Buy Defense Bonds* ★

Get this HIRED HAND!



CLEAN-EASY MILKER
WITH NEW GLASS MILK PAILS

Clean-Easy revolutionizes machine milking! New, sanitary glass milk containers give you "sight" milking—you know at a glance what your cows are doing! You get fast, clean, easy milking with less work! Gas or electric power, transparent or rubber teat cups, portable or track models. Write Ben H. Anderson Mfg. Co., Madison, Wis., Dept. 15

Save up to $18.00 ON A FULL-SIZE ELECTRIC BROODER

The TRUMBULL Brooderator Unit for Home-made Brooder . . . Capacity: 300 to 400 Chicks

MAKE YOUR OWN HOVER

You can make an insulated Hover for the Trumbull Brooderator in an hour, and the cost of your Brooder complete will be less than $20.00 We Guarantee the Brooderator, in your home-made Hover, to brood from 300 to 400 chicks efficiently and at very low cost. Brooderator, only $17.50, with full directions for making the Hover. Write for new folder.

The TRUMBULL ELECTRIC MFG. CO.
1012 Woodford Avenue
Plainville, Conn.

Your hi-line helps you with the **"BIG JOB"**

by saving fencing time and materials— when you use the SAFE

PRIME HI-LINE
Electric Fence Controller

You can speed up the "big job" of producing more food — when you use Prime, the famous Underwriter-approved *hi-line* controller . . . Twice the "shock" of other makes. Effective alternating current on fence.

See your Prime dealer today.

The Prime Mfg. Co.
Milwaukee • Wisconsin

Elmer the Bullhorg says:
"I'm strong as a bull, big as a horse, slippery as a hog. I respect only one fence—Prime, the fence that holds all livestock, all the time, all over the farm.
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less work, more $ with PAGE Portable Milker

Milks 20-25 cows an hour. Safe vacuum control for each cow gets *more milk*. Double or single units. Sanitary *visible* chamber . . . no dirt-catching corners. *Clean in a jiffy.* Gas or electric. Write for *free* colorful catalog.

Write Today for FREE Colorful Catalog

Pioneer Mfg. Co.
Dept. MK 32
WEST ALLIS, WIS.

Monarch ELECTRIC *and* COAL-WOOD
COMBINATION RANGES

Today's most popular "high line" range: electric on one side—coal or wood on the other. Provides year 'round kitchen comfort.

See a MONARCH outlet or —

Write for booklet illustrating complete line.
MALLEABLE IRON RANGE CO.
1242 Lake Street — Beaver Dam, Wis.

Questions and Answers

Electric Lawn Mower

▶**Question:** *I am interested in the electric lawn mower described in your May issue, and referred to again in the August issue.*

Would you have any further information to give out at this time as to the possibility of obtaining one of these machines, and has the practicability of the outfit been proven?

J. L. R., La.

▶**Answer:** The electric lawnmower described in our May issue and further referred to in our August issue is manufactured by the Sterling Equipment Company at Danville, Illinois. A number of people bought these lawnmowers during the past year and found them quite satisfactory, according to reports received directly from our readers. However, we do know that some found them not quite strong enough for heavy duty work and accordingly, the manufacturer is planning some changes in the 1942 model.

I'd suggest that you wait until you hear further about this in ELECTRICITY ON THE FARM or get word directly from the manufacturer before purchasing this equipment.

Hay Hoist

▶**Question:** *In* ELECTRICITY ON THE FARM, *inside front cover of the October issue, you have a picture of an electric motor and reel drawing up hay with electric motor. Please give me name of manufacturer of equipment required for this work and the size motor required to operate double fork. This reel would be almost impossible for average farmer to make as gear ratio would have to be worked out by engineer. What would be the cost of reel and motor?*

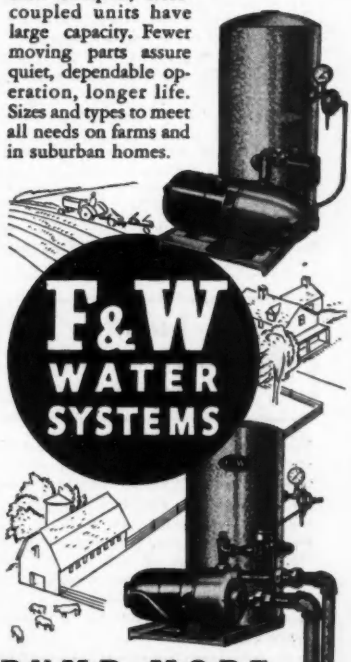
F. J. K., Ohio.

▶**Answer:** While I do not know whose equipment is shown in that advertisement of the General Electric Company, it looks like a G.E. portable motor and an Ireland Hay Hoist. This 3 hp single phase portable motor is listed in the G.E. Farm catalog at $190.00 complete with starter and extra pulley. A bare 3 hp motor without the truck or starter is listed at $82.00. A 1 hp motor is listed at $37.00 and a 5 hp at $120.00. Single drum hay

More Water TO RAISE MORE FOOD

Big increases in production on all farms are vital to the U. S. victory program. That calls for more water—and with lessened man power, it means water under pressure.

New F & W centrifugal pumps embody 76 years' experience . . . are designed and engineered to deliver more water at less cost. Compact, close-coupled units have large capacity. Fewer moving parts assure quiet, dependable operation, longer life. Sizes and types to meet all needs on farms and in suburban homes.



PUMP MORE AT LESS COST

For efficiency and economy, in first cost and through long years of satisfactory service select one of the new F & W Centrifugal Jet Pumps . . . for shallow wells . . . for deep wells. Write now for *Free* literature and information about models to meet your needs. No obligation, send a postcard today.

FLINT & WALLING MFG. CO., INC.
295 OAK ST., KENDALLVILLE, INDIANA

hoists may be obtained at from $50 to $80 from the following companies:

Ireland Machine & Foundry Co., 110 State St., Norwich, N. Y.

Universal Hoist & Mfg. Company, Cedar Falls, Iowa

Such hoists may be operated with 2, 3 or 5 hp motors depending upon the speed of hoisting or in other words, the pulley ratio between motor and hoist. I have even seen hay hoists operated successfully with 1 hp motors where very low speed hoisting was satisfactory.

Stock Tank Heater

▶**Question:** *We have been trying to get information on prevention of freezing in the water tank supplying cattle for some time. It would be possible to place this water tank inside a building with two doors at which to drink and connect the water tank with the reservoir, of which the temperature remains about 50. We have thought that a tank with a float valve at which three or four cows could drink at one time, would be sufficient supply for us.*

We have been considering a barrel with heating cables around it, not knowing heaters such as you described were available on the market. Do you have any suggestion as to the type of heater we might use on this experiment? If so, where can such heaters be obtained? What is the approximate cost of installation? Dr. C. M. P., Neb.

▶**Answer:** There is a stock tank heater made by the National Ideal Company, Toledo, Ohio, which should answer your purpose very nicely. It is a 1,000 watt immersion type unit with thermostatic control to hold the water between 42° and 52°. It is possible that by having this small tank inside the barn you could get along with a 300 watt thermostatically controlled heater. These are not made as a stock article but if you would write to Mr. Howard L. Smith of the Trumbull Manufacturing Company, Plainville, Conn., and ask for a 300 watt tank heater, I believe he could supply you. The price would, I think, be under $5.00.

Electrical Water Purification

▶**Question:** *Is there any device on the market to electrify water to purify it for drinking? How could such an arrangement be prepared at home by using wires or anything else for this purpose?*

W. L. S., Ill.

▶**Answer:** There is no electrical device on the market to my knowledge which will purify dirty or contaminated water for drinking, that would have universal application. There are electrically controlled devices for softening hard water and for chlorinating slightly contaminated water. Chlorine is used to kill the contaminating germs. A small chlorine treating pump may be purchased for about $100.00. Berkfeld porous filters will remove dirt and some bacteria from the water. They are usually attached to the spigot. Activated carbon filters will remove any odors and bad taste. Activated carbon is similar to charcoal but much more effective. A chemical—"calgon"—may be added to the water to keep the iron in solution so it will not separate out and turn the water red when it is heated. Ultraviolet sterilamps have been used for killing mold spores in water but I do not know of any cases where they have been used for the treatment of drinking water.

You can see from the above that the matter of treating impure water is a rather technical process. It might be relatively simple in your case if just one thing is wrong. I would suggest sending a sample of the water to your State Health Department or Agricultural Experiment Station for analysis and prescribing what treatment would be necessary.

Vitamin Oil Situation

The following order was issued by the War Production Board on February 10.

"Unless expressly authorized by the Director of Industry Operations, no person shall, on or after April 10, 1942, manufacture or prepare feeds which in the form recommended to be consumed contain more than 1,000 U.S.P. XI units of Vitamin A per pound derived from fish or fish liver oils."

Commenting further, the Board says:

"The health supplies branch stated that many feeds today contain an excess of Vitamin A. This occurs where fish oils are used for their Vitamin D content which is found in combination with Vitamin A in fish liver oils. In such instances feed manufacturers may fortify their product by adding synthetic Vitamin D to make up the difference caused by this restriction."

Vitamin D is the sunshine Vitamin which may be supplied by ultra violet lamps. Where feeds are made up with the new fish-liver oils, the deficiencies may be made up with S-4 lamps. For a detailed discussion of the subject, see the article "Ultra-Violet vs. Cod Liver Oil" by Prof. D. C. Kennard in our September, 1941, issue on page 8.

buyers' INFORMATION service

YOU, as a reader of this magazine, are entitled to our buyers' information service free of cost. When looking for information about equipment or material that you plan to buy, first read carefully the advertisements in this issue. Then, if you do not find what you want, use the coupon below to tell us what you need and we will forward your request to interested manufacturers.

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Reader Service Dept., 24 W. 40th St., New York

Without cost to me, please have manufacturers send complete information on the following Electrically Operated Equipment which I am thinking of buying:

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WRITE FOR BROWER'S 100-PAGE Catalog describing complete line electric poultry equipment. Eight models Floor Brooders — Water Heaters — Incubators — Hammermills — Feed Mixers. World's Largest Line of Poultry Supplies — over 425 items. BROWER MFG. CO., Dept. N-62, Quincy, Illinois.

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SMALL INCUBATORS for Farmers and Game Breeders. Sizes 96 to 3500 Eggs. Also Electric Switches, Heaters, and Spare Parts. AMERICAN ELECTRIC INCUBATOR COMPANY, New Brunswick, N. J.

Help War Production

— and help yourself to some cash. Cash prizes will be given for your ideas and experience on the use of electricity to save waste on your farm.

HOW ELECTRICITY SAVES WASTE CONTEST

THE WINNERS

in January Contest for best statements on "How Electricity Replaced Labor On Our Farm." See page 12 in this issue for the full details of how these farm families are saving labor for war production.

FIRST PRIZE—$20 Cash

HELEN M. STROUD,
Route 2,
Cochranville, Pa.

SECOND PRIZE—$5 Cash

J. B. SHEFFIELD,
Route 1,
Clarion, Iowa

Five $3 Prizes

MRS. CLARENCE OBERMEYER,
Route 2,
Kokomo, Indiana

MRS. FORREST BROWNELL,
Johnsonville, New York

CLIFFORD O. NUNGEZER,
Route 1, Box 275,
Charleston, S. C.

MRS. ORVILLE BARKER,
R.F.D. 1, McConnell, Illinois

M. BAIROS,
Route 1,
Chowchilla, Calif.

Nine $1 Prizes

Charles Burton, R. 1, Cedar Lake, Indiana
Mrs. Russel Roberts, R. 14, Box 578, Indianapolis, Ind.
Mr. James Blaine Frazee, Markleysburg, Pa.
Mrs. J. W. Blankenbaker, R. 2, Jeffersontown, Ky.
Mrs. Frances Cummings, R.F.D. 1, Box 102, Willard, Ohio
A. M. Vitale, R.F.D., Lincoln Park, New Jersey
O. G. Swartz, R.F.D. 3, Medina, Ohio
Mrs. Almira Gardner, R. 3, Townsend, Delaware
Mrs. W. N. Kieffer, R 2, Lockport, New York

RULES FOR

ELECTRICITY SAVES WASTE CONTEST

- Cash prizes will be awarded for the best letters or statements on how electricity helps to save waste on your farm.
- Letters need not be lengthy — the shorter the better. Facts and figures are more important than literary style or form of presentation.
- There will be one first prize of $20.00 cash, one second prize of $5.00 cash, and five prizes of $3.00 cash.
- We will also pay $1.00 for any other entries we use.
- In case of a tie each winning contestant will receive the full cash prize to which he or she is entitled.
- We will also pay $1.00 to $3.00 for any photos we can use.
- All members of the farm family to whom this magazine was sent may enter, but each contestant may submit only one statement.
- The decision of the judges is final and all entries become the property of this magazine.
- Winning names and entries will be announced in the May 1942 issue.
- Send your entry on a plain piece of paper, letterhead or government postcard.
- Entries should be sent to the War Production Contest Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York, and must be postmarked before April 1.

Just Like Finding Money!

Wouldn't you be thrilled if you went to the mailbox and found a letter with a check for a prize in a contest you'd forgotten all about? Just like finding money, you'd say, and immediately think of dozens of things you want to buy.

Here's a way you can get a similar thrill. Take a look around—in the attic, on the pantry shelves, or out in the storehouse—and chances are you'll find some electric appliance or piece of equipment that you have discarded and that can be made as good as new with only minor repairs. Maybe just a new cord, a tightened connection or some other adjustment is all that is needed.

When they are fixed, you'll agree that it's just like finding money.

Don't let Electric Equipment loaf on your farm!
Take it to an Electric Shop today if needing repairs!

●

ASK YOUR ELECTRIC COMPANY

or your electrical equipment dealer if you need further information. Or, if you prefer, address your inquiries to ELECTRICITY ON THE FARM, 24 West 40th Street, New York, or 6 No. Michigan Avenue, Chicago.

c

ELECTRICITY ON THE FARM
24 West 40th Street
New York, N. Y.

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